

SYSTEMATIC EVALUATION AND DESCRIPTION OF
LIFE STAGES OF "SESIA" ROMANOVI (LEECH)
(SESIIDAE)

YUTAKA ARITA

Zoological Laboratory, Faculty of Agriculture, Meijo University, Tempaku-ku,
Nagoya, 468 Japan

AND

KAZUAKI HIRAO

Hoshi-cho 219, Hamamatsu-shi, Shizuoka-ken, 431-31 Japan

ABSTRACT. The head, wings, genitalia and the early stages of "*Sesia*" *romanovi* (Leech, [1889]) are described and illustrated. We transfer *romanovi* from the genus *Sesia* Fabricius, 1775 to *Glossosphesia* Hampson, 1919, **new combination**.

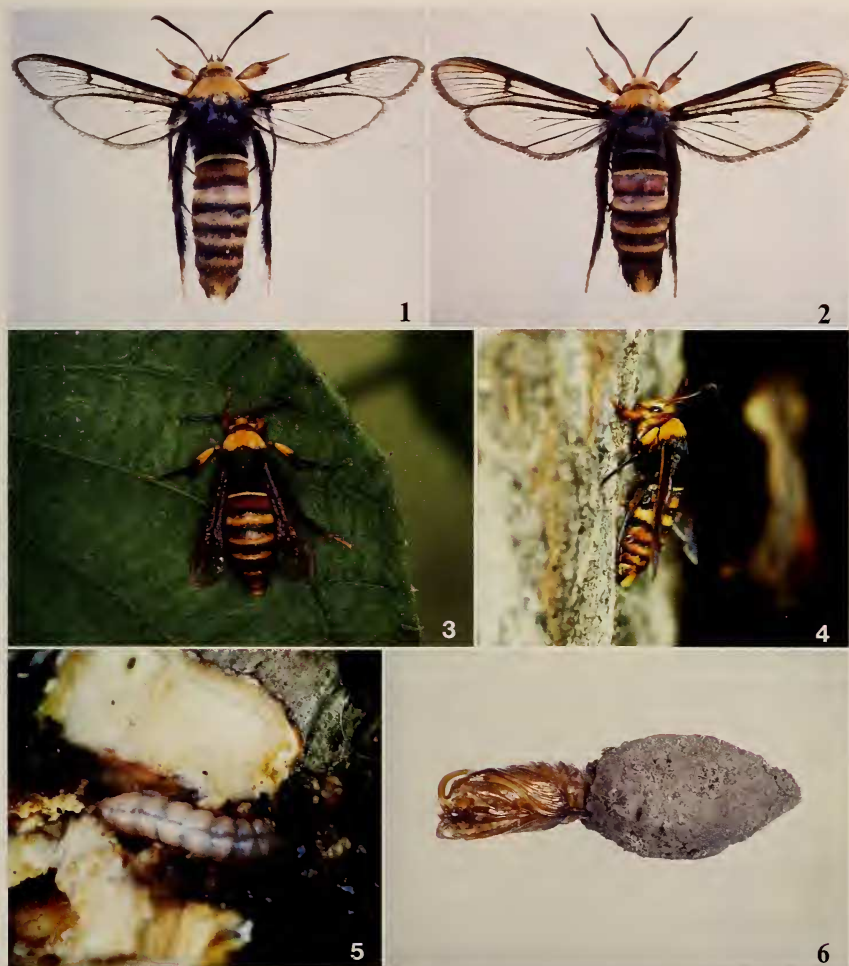
Additional key words: *Glossosphesia romanovi*, early stages, taxonomy, host-plant, Vitaceae.

"*Sesia*" *romanovi* (Leech [1889]) is known as somewhat of a minor pest of cultivated grapevine in a limited and localized area of eastern Kyushu (Nakashima et al. 1978:10-11, 1980:55 & 8029, Nakashima 1984:319). This species was originally described in the genus *Sphecia* Hübner [1819] (a synonym of *Sesia* Fabricius 1775) by Leech ([1889]: 591). Hampson (1919:79) referred it to as *Aegerosphesia* Le Cerf 1916. Afterward, *romanovi* was placed either in *Aegerosphesia* or *Sesia* by most authors, with the exception of its placement in *Synanthedon* Hübner [1819] by Inoue (1982:235).

Having examined the venation and genitalia of *romanovi*, we are convinced that this species should be transferred from *Sesia* to *Glossosphesia* Hampson (1919) (type species *G. contaminata* (Butler 1878)). In addition, *Glossosphesia* is very similar to the North American genus *Cissuvora* Engelhardt (1946) (type species *C. ampelopsis* Engelhardt 1946), by characters of adult and larvae (MacKay 1968, Naumann 1971, Eichlin & Duckworth 1988), viz.: antenna long unipectinate in male; labial palpi erect, over the vertex; wing venation of forewing stalk of R_4 plus R_5 stalked with R_3 ; male genitalia gnathos remarkably long, subscaphium stout, valva with well developed palm-like sensory setae; female genitalia: corpus bursae with many transverse folds throughout; larval anal shield with a pair of stout and remarkable spines in early instar, but scarcely apparent in late instars.

***Glossosphesia romanovi* (Leech [1889]), new combination**
(Figs. 1-17)

Sphecia romanovi Leech [1889]:591, pl. 30, fig. 1. Bartel 1912:378, pl. 51a. Gaede 1933: 786.



FIGS. 1-6. *Glossosphecia romanovi* (Leech). 1, Male adult; 2, Female adult; 3 and 4, Freshly emerged male adult; 5, The mature larva in tunnel, exposed; 6, Earthen cocoon.

Trochilium romanovi; Matsumura 1911:49, pl. 34, fig. 1.

Aegerosphecia romanovi; Hampson 1919:79. Matsumura 1931a:1012, 1931b:9. Inoue 1954:44, 1957:153. Nakashima et al. 1978:10, 1980:55 & 8029. Nakashima 1984:319.

Aegerosphecia romanowi [sic]; Dalla Torre & Strand 1925:173 [misspelling].

Sesia romanovi; Heppner & Duckworth 1981:28.

Synanthedon romanovi; Inoue 1982:235.

Adult (Figs. 1-4). Wingspan 5-48 mm. Head (Fig. 7): vertex roughened, bright orange; frons dark fuscous, mixed with orange scales. Occipital fringe snow-white. Antenna remarkable long unipectinate in male, black, basal $\frac{1}{3}$ and apical part reddish brown; ventral side brownish. Labial palpus bright orange; basal segment reddish orange, slightly

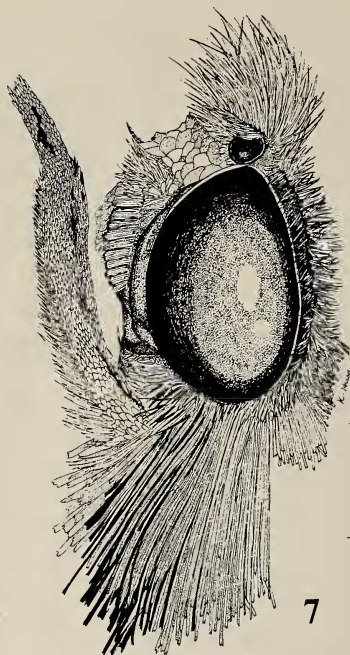


FIG. 7. *Glossosphecia romanovi* (Leech), head profile of male. Scale line = 1.0 mm.

mixed with black scales; terminal segment reddish orange. Thorax black, anterior $\frac{1}{3}$ bright orange; patagial collar bright reddish brown, mixed with black scales in male; tegula black, anterior half bright orange. Abdomen dorsally brownish orange; 1st and 2nd segments black, 2nd segment with yellow posterior margin; other segments with blackish

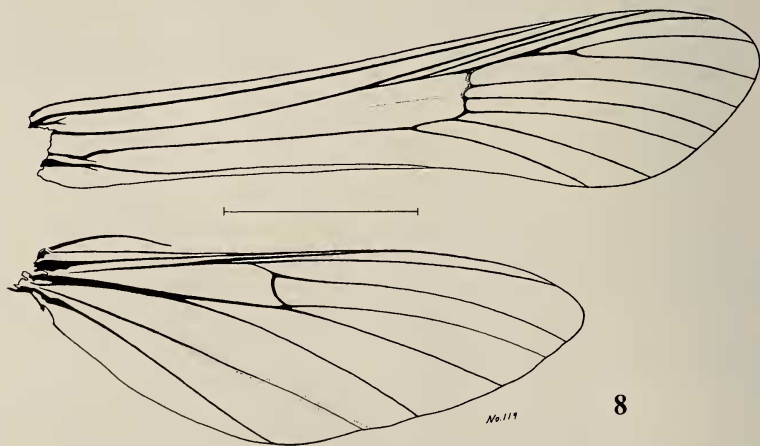
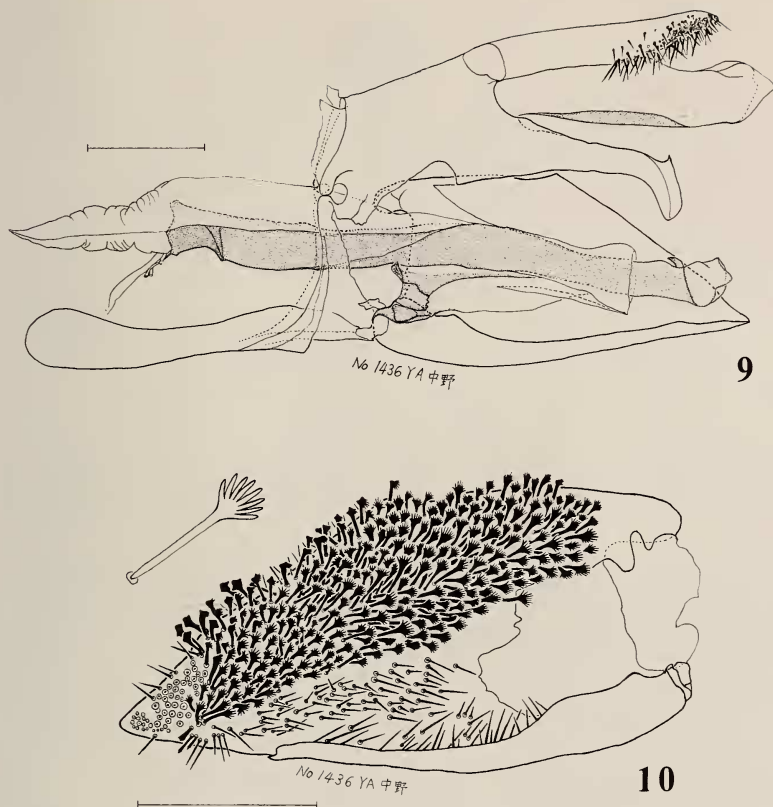


FIG. 8. *Glossosphecia romanovi* (Leech), wing venation. Scale line = 5.0 mm.



FIGS. 9-10. *Glossosphecia romanovi* (Leech), male genitalia, genitalia on slide no. 1436 YA. 9, Lateral aspect with left valva removed; 10, Left valva. Scale line = 1.0 mm.

brown posterior bands; terminal segment blackish brown, bright orange on middle; ventral side as on dorsal side. Foreleg: coxa reddish orange, posterior margin black; femur black, posterior tips reddish orange; tibia and tarsus reddish orange. Midleg: coxa black, femur upper half orange, lower half black; tibia basal $\frac{2}{3}$ orange, posterior $\frac{1}{3}$ dark brown. Hindleg: femur black; tibia black, mixed with dark brown scales, small orange dot on middle outwardly; tarsus black. Forewing (Fig. 8): hyaline, costal and dorsal margin dark brown, mixed with reddish brown scales along subcostal in female; discal spot dark brown; apical area sparsely fuscous, small scales; cilia fuscous. Hindwing (Fig. 8): hyaline, outer half sparsely irrorated with small yellowish scales; cilia fuscous, slightly mixed with yellow scales.

Male genitalia (Figs. 9, 10). Uncus very long, sparsely clothed with hairs on apical half of ventral part. Tegumen broad; with well developed gnathos, apex expanded and minutely hooked upward. Tuba analis long and large, ventral side weakly sclerotized. Gnathos extremely long, apex largely spatulate, acutely pointed dorsally. Saccus very long, almost as long as valva, apex broadly rounded. Anellus long, membranous, basal half of ventral part weakly sclerotized. Valva elongate, broadest near base, tapered to apex, dorsal half with very conspicuous palmate-multifurcate scales, ventral half with setae on apical $\frac{2}{3}$. Aedeagus very long, slender, rather straight, with subapical strongly recurved spine.

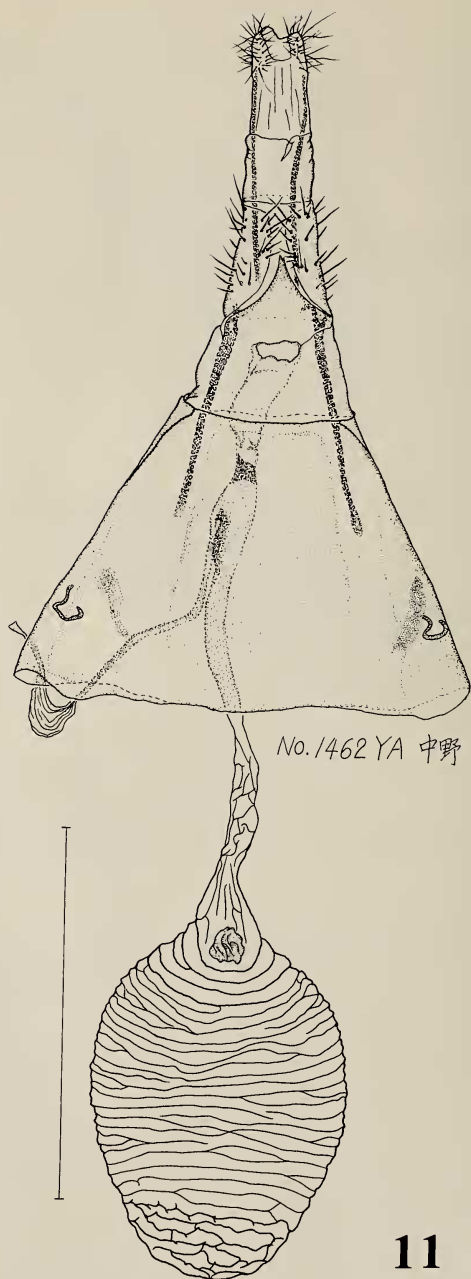
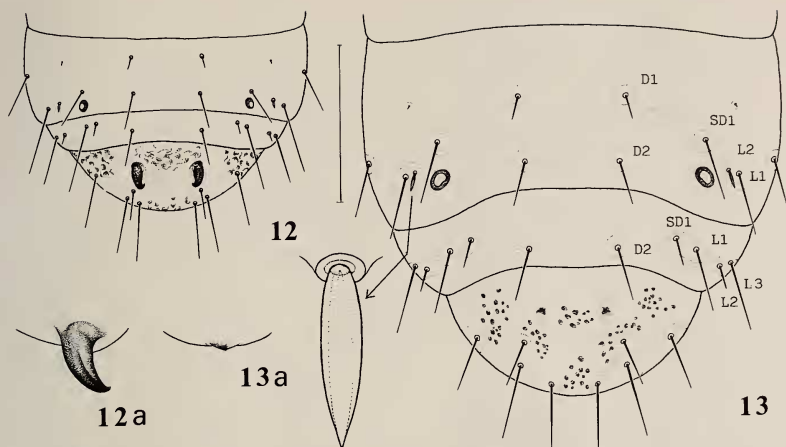


FIG. 11. *Glossospectia romanovi* (Leech), female genitalia, genitalia on slide no. 1462 YA. Scale line = 5.0 mm.



FIGS. 12-13. *Glossospechia romanovi* (Leech), dorsal view of eighth to tenth abdominal segments. a: enlarged anal shield spine. 12, Early instar larva; 13, Mature instar larva. Scale line = 2.5 mm.

Female genitalia (Fig. 11). Papillae anales small and slender, with sparse hairs. Postapophysis and antapophysis long, almost equal in length. Ostium bursae semicircular, opening in intersegmental membrane between 7th and 8th abdominal segments. Antrum very short, on $\frac{1}{2}$ of ductus bursae. Ductus bursae long, slender, with ductus seminalis from just beyond antrum. Corpus bursae rather large, obovate, with many transverse folds throughout; signum uneven circular, near entrance of ductus bursae.

Mature larva (Figs. 5, 12, 12a, 13, 13a, 14a-i). Length 38.0-43.0 mm. Head dark brown, mouthpart blackish brown. Body light pinkish purple in late instars; prothoracic shield light brown; thoracic legs light brown. Head broader than long; coronal suture extremely short. Ocelli: six on each side, the relative position as shown in Fig. 14b. Labrum (Fig. 14c) outer margin quite convex. Mandible with four large teeth (Fig. 14d). Spiracle of 8th abdominal segment located in dorsal area and rather near to posterior margin (Figs. 12, 13). Anal shield (Figs. 12, 12a, 13, 13a) close to anterior margin with pair of stout and remarkable spines in early instar (Figs. 12, 12a) but scarcely apparent in late instars (Figs. 13, 13a). Proleg (Fig. 14h) with 38 crochets. Anal proleg (Fig. 14i) with 10 crochets.

Chaetotaxy. Head (Figs. 14a and b) with setae short; AF1 microscopic. A1 and A3 very long; A2 very short, adjacent and posterolateral to A1. P2 microscopic and distant from P1. O1 very short and posteroventral to ocellus III. O2 extremely long and ventral to ocellus I. Prothorax (Fig. 14e) with a L group trisetose and located in almost straight line on large oblong pinaculum. SD1 extremely long and SD2 microscopic on 1st-7th segments. L3 of 1st-9th segments very long. L2 of 8th segment scale-shaped.

Material examined. Japan: Kyushu—11 specimens, feeding within trunk of cultivated grape, Ohita-ken, Usa-gun, Ajimu-cho, 18.IX.1985, K. Hirao leg.

Pupa (Figs. 6, 15a and b, 16a-c, 17a-c). Length 20.0-21.0 mm. Width 6.0 mm. Brown, very stout. Frontal process (Figs. 15a and b) broad, depressed orbicular, slightly concave at middle of posterior margin in dorsal view; low pointed in lateral view. Clypeus large, squared; maxillae longer than prothoracic legs. Metathoracic legs reaching to posterior margin of 5th abdominal segment. Wing tips nearly reaching to posterior margin of 4th abdominal segment. Dorsum of mesothorax with strong enlarged and ridged alar furrows. Dorsal spines of abdominal segments as follows: one row on segments 1, 8 and 9 in male (also on 7 in female), two rows on segments 2-7 in male and 2-6 in female. Tenth abdominal segment (Figs. 17a-c) with five pairs of spines; one pair of spines on dorsal side and four pairs of spines on lateral side.

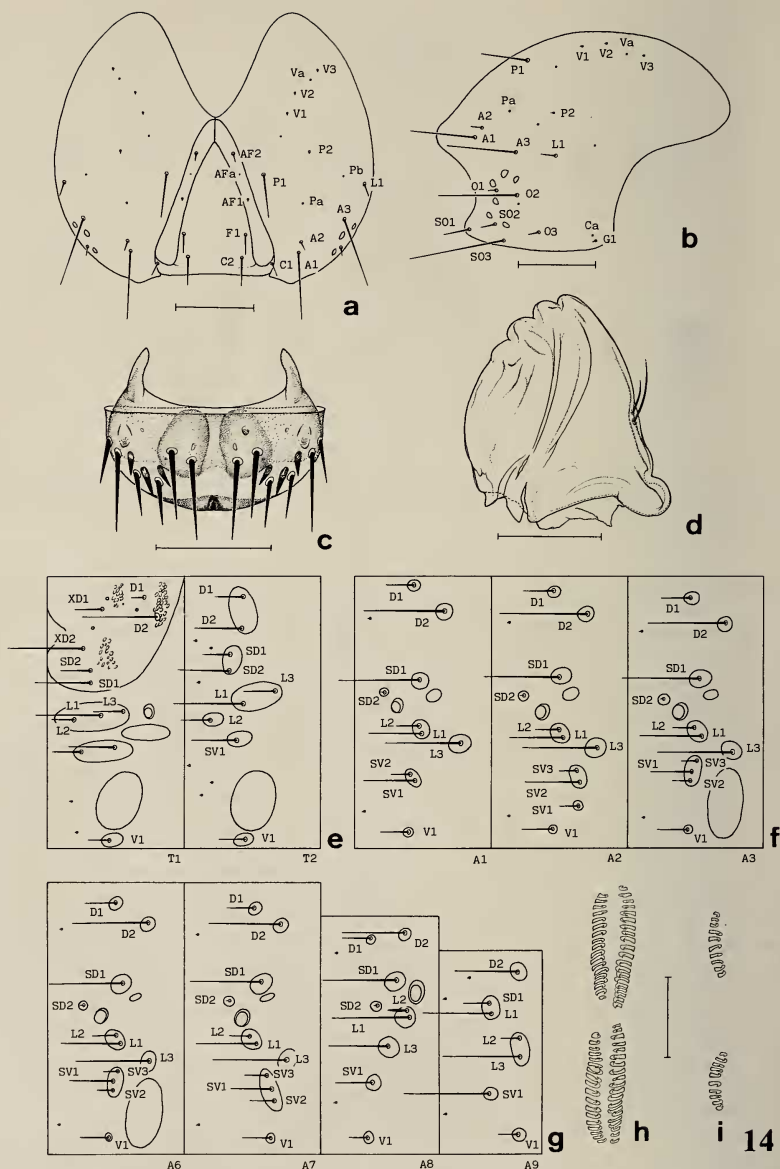
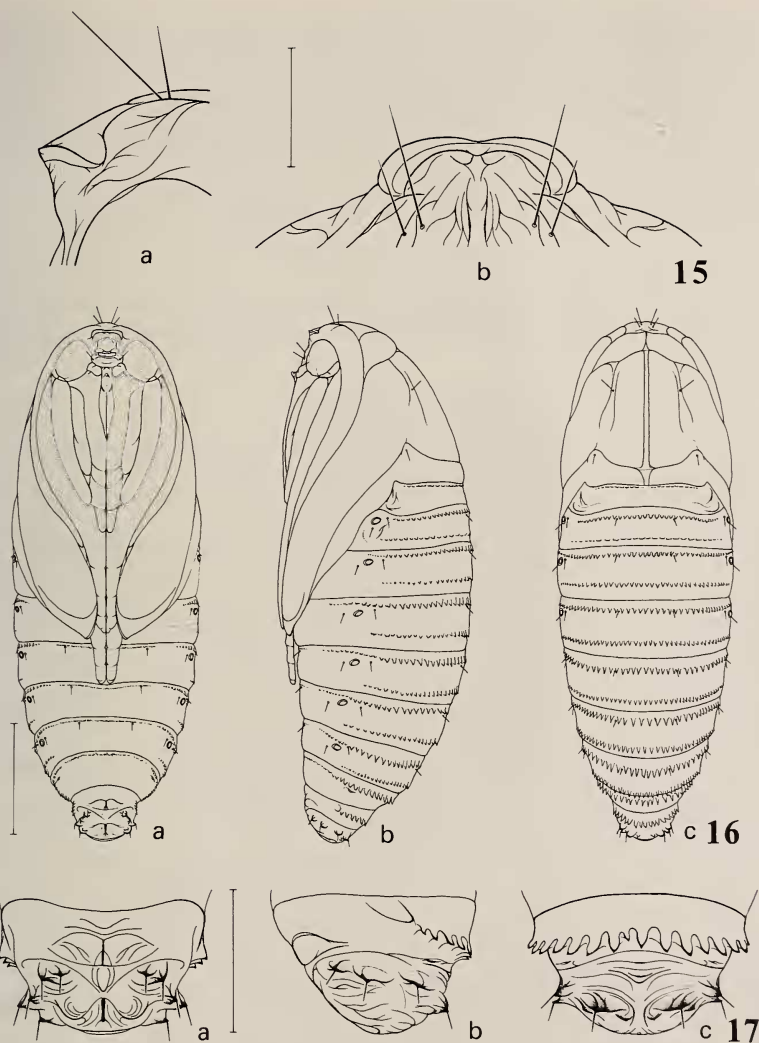


FIG. 14. *Glossosphecia romanovi* (Leech), mature larva. **a.** head, dorsal view; **b.** ocellar region, left side; **c.** labrum, dorsal view; **d.** mandible, ventral view; **e.** pro- and mesothorax; **f.** first to third abdominal segments; **g.** six to ninth abdominal segments; **h.** third abdominal proleg, ventral view; **i.** anal proleg, ventral view. Scale line: **a**, **b**, **h** and **i** = 1.0 mm, **c** and **d** = 0.5 mm.



FIGS. 15-17. *Glossospechia romanovi* (Leech), pupa, male. 15, Pupal frontal process (a: lateral view; b: dorsal view); 16, Total aspect (a: ventral view; b: lateral view; c: dorsal view); 17, Spines of tenth abdominal segments (a: ventral view; b: lateral view; c: dorsal view). Scale line: 15a-b = 1.0 mm; 16a-c = 5.0 mm; 17a-c = 2.0 mm.

Material examined. Japan: Kyushu—1 ♂, pupa from earthen cocoon in soil close to cultivated grape, Ohita-ken, Usa-gun, Ajimu-cho, 30.IV.1985, K. Hirao leg., fixed on 30.V.1985; 1 ♂ with same locality, 22.V.1986, Y. Arita leg.

Bionomics. Univoltine. The egg is laid singly in bark crevices during August. The larva constructs a linear horizontal ringed tunnel around the trunk, between bark and wood in the lower part from ground level to near one meter high on the trunk of host-plant (Fig. 5). The brown frass and reddish violet sap are extruded or oozed from the larval

tunnel through bark from middle July through early September. The larva may cause heavy injury to grapevines. The full-grown larva drops out its burrow and forms a tough and irregular earthen cocoon which is closely lined with silk. The rough oblong cocoon measures 28 mm in length and 14 mm in width (Fig. 6). Formation of the cocoon takes place in autumn at a depth of up to about 5 cm in the soil, and the larva overwinters within the earthen cocoon. Pupation occurs near the end of May. Adults fly from the end of June through August.

Host-plant. Cultivated grapevine, *Vitis* species (Vitaceae).

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu).

ACKNOWLEDGMENTS

We wish to express our thanks to Mr. M. Nakashima, Oita Prefectural Agricultural Research Center, Oita, for his valuable information on the habitats and bionomics of this rare species.

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Received for publication 3 August 1991; revised and accepted 26 September 1991.